

# PCP's Year In Review

# 2016

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The North Carolina Plant Conservation Program was established by the Plant Protection and Conservation Act of the North Carolina Legislature in 1979. The Program is part of the Plant Industry Division of the North Carolina Department of Agriculture and Consumer Services.

The mission of the Plant Conservation Program is *to conserve North Carolina's native plants in their natural habitats, now and for future generations.*

### **NC Plant Conservation Board**

Ms. Katherine K. Schlosser, Chairperson

Mr. Les Hunter, Vice Chairperson

Mr. Stephen Henson

Dr. Alexander Krings

Mr. David Hyatt

Mr. Jonathan T. Lanier, Esq.

Mr. Damon Wyatt<sup>a</sup>

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<sup>a</sup> Damon Wyatt replaces Peter White as the Director of the North Carolina Botanical Garden, a permanent seat on the Plant Conservation Board. Mr. Wyatt's position on the board has not been confirmed at this time.

### **Program Capacity**

The Plant Conservation Program experienced significant changes in 2016. After wishing Rob Evans well on his departure from the program at the turn of the year, PCP felt his absence. In June, **Lesley Starke** was promoted to fill the role of Plant Ecologist and to steer the land protection and management activities as well as to represent the program in state-wide and regional partnerships. Sadly, **David Welch** passed away in early July after several months of battling with cancer. His dedication to not only PCP, but conservation as a whole, will not be forgotten. Just days before his passing, David was still in regular communication with staff members and our board, moving projects forward. Kathy Schlosser said it well in an announcement to the Friends of Plant Conservation, “[David] was passionate without rancor, supportive without being intrusive, and always listened--a rare attribute. He knew how to compromise without giving up his principles or expecting that of others. We will miss David, and grieve with his family over the loss of this unassuming man of great personal strength and integrity.” **Nancy Stewart** and Lesley kept the Raleigh office afloat and all projects proceeded ahead with great support from the rest of Plant Industry Division, elsewhere in the NC Department of Agriculture & Consumer Services, and our numerous partners in other agencies and organizations. **Jessica Richmond** left the program in September. Her contributions to preserve management as well as volunteer recruitment and retention at Redlair were notable and she will be missed. In October, **Jenny Stanley** was promoted to fill the role of Research Specialist where she will take over issuing permits and lead monitoring and data collection efforts for the program. **Miller Caison** and **HL Rich** continued to greatly expand our program’s prescribed burning efforts in 2016, primarily at Boiling Spring Lakes, but also at Pondberry Bay. In December, **Cheryl Gregory** accepted the position of Program Administrator for PCP, bringing our permanent staff back to full at the close of the year. Cheryl comes to us from the NC Department of Transportation where she worked with US Fish and Wildlife Service to carry out the Section 7 consultation process for federally protected species impacted by NCDOT roadway projects. She was also responsible for maintaining several mitigation tracts for threatened and endangered species in order to preserve or enhance these properties to benefit species of concern. While working at NCDOT, she obtained a M.S. in Forestry and Botany from NC State University, her thesis work involved developing search criteria and defining habitat characteristics for the imperiled Sandhills lily, *Lilium pyrophilum*.

### **Protection Priorities**

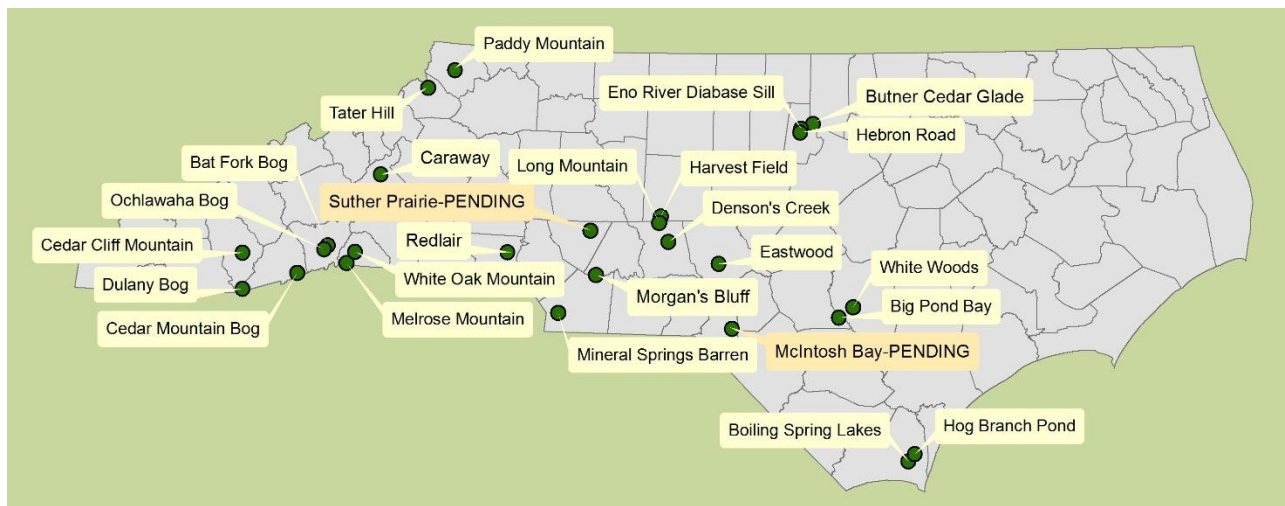
PCP’s conservation goal is to ensure protection of the two best natural populations of each imperiled plant species within each of the state’s 22 ecoregions in which they naturally occur. PCP maintains a list of priority sites available to distribute to partners in both spreadsheet and GIS shapefile formats. Send info requests to [lesley.starke@ncagr.gov](mailto:lesley.starke@ncagr.gov). We will be working with our partners to alert them to any changes in our priority lands portfolio that are in their working area. Given possible changes to the total protected species list as well as new population discoveries, loss of populations to various causes, and updates regarding the viability of known locations, the PCP staff anticipates the need to reassess which are the two best sites per ecoregion periodically. We remind all of our conservation partners to help us do this by submitting your data and observations of rare plants and communities to the NC Natural Heritage Program whose databases greatly inform our prioritizations.

**Conservation Targets:** Plant Conservation Preserves are the only public lands in North Carolina established and managed specifically to protect imperiled plant species. To help accomplish PCP's mission of conserving North Carolina’s native plant species *in their natural habitats*, each of our 24 preserves is specifically designed with a focal species; yet in most cases, multiple species are protected at a given site. As of December 2016, the Plant Conservation Program’s preserve system protects 67 extant threatened, endangered, or vulnerable species (11 of which are federally protected species; see page 12).

### Property Acquisition Updates

In late 2015, PCP was successful in purchasing the **Caraway Plant Conservation Preserve** in McDowell County. This feat would not have been possible without the numerous generous contributions made to the Friends of Plant Conservation Program which provided the necessary matching funds to secure state funding from the Clean Water Management Trust Fund. PCP staff hosted a ribbon-cutting style opening ceremony in April—we were pleased with the turnout despite the rainy weather!

Although no new plant conservation preserves were added in 2016, additional acreage was added to three preserves: **Tater Hill** (30 ac), **Paddy Mountain** (108.5 ac), and **Cedar Mountain Bog Preserves** (22 ac). These added acres provide additional protected plant habitat and important natural communities to the preserve system making the conservation value of each site more robust. In October 2016, the Clean Water Management Trust Fund awarded funding to two partner land trusts to acquire additional acres to add to PCP Preserves. These projects include the Blue Ridge Conservancy pursuing ~380 acres to add to **Tater Hill** and the Sandhills Area Land Trust pursuing ~22 acres to add to **Eastwood**. Two new properties (Suther Prairie and McIntosh Bays) are pending acquisition into the Preserve System (see map below). The former is a project being undertaken by the Cabarrus County Soil and Water Conservation District with the plan to transfer the property to PCP for permanent protection. The latter is a collaborative project between The Nature Conservancy (TNC) and PCP whereby TNC has purchased the property from the private land owner and is in the process of conducting restoration activities before selling the property to PCP to become new preserves. Both of these projects are expected to close in 2017.



The PCP Preserve system includes 24 preserves, in 18 counties across the mountains, Piedmont, Sandhills, and coastal plain regions with >13,600 ac.

### Field Trips

PCP staff scheduled preserve tours in 2016 and responded to various requests for tours and public presentations. Six guided tours were conducted at **Caraway**, **Butner Cedar Glade**, **Tater Hill**, **Eno River Diabase Sill**, **Hebron Road**, and **Redlair** reaching citizens across the state. Three additional scheduled preserve tours were unfortunately cancelled due to bad weather at **Cedar Cliff Mountain**, **Paddy Mountain**, and **Boiling Spring Lakes Preserves**.



PCP's field trips are open to the public and free for Friends of Plant Conservation members ([ncplantfriends.org](http://ncplantfriends.org)). Each trip provided the opportunity to observe rare plants, while also learning more about land management and ecological stewardship. Participants included special guests, volunteer stewards, and co-hosts from some of our partner organizations. Remember to check out our website, [www.ncplant.com](http://www.ncplant.com) for a current field trip schedule!

### **Volunteers Really Help!**

In addition to staff time, PCP's stewards and other volunteers logged > 1,970 person hours across six preserves in 2016!! Their time and efforts included ~240 stewardship site visits, volunteer workdays, and time spent on augmentation projects. Tasks included invasive species control, brush cutting and piling, monitoring, and much more. There is more to do. If you or someone you know who would like to help, please contact us.



Volunteers pulling *Microstegium vimineum* at the Eno River Diabase Sill (left) and Redlair (right) Preserves. This work was done carefully by hand to avoid impacting imperiled plant species growing in the vicinity.



Volunteers helping with a trash pick-up workday at the Hebron Road Preserve (left) and establishing photo plots for monitoring rare plants at the Caraway Preserve (right). Photo credit: PCP Staff.



### **Controlled Burning Program**

Controlled burns are one of the most important management and restoration activities needed across the PCP preserves and for North Carolina's rare plants in general; surprising numbers of imperiled species state-wide benefit from such fires and are threatened by fire suppression. 2016 brought with it a "Return of the Burns!" A total of ~1,300 acres were burned across six PCP Preserves (**Pondberry Bay, Boiling Spring Lakes, Mineral Springs Barren, Redlair, Eno River Diabase Sill, and Eastwood**), representing nearly 10% of all PCP land. The vast majority of these burns were conducted by PCP Staff in partnership with NC Forest Service staff. As with last year, credit for much of our burning success is due to the experience and dedication of our field staff, Miller and H.L., who were able to focus on fire and coordinate burns in multiple locations. Of special note, nearly half of all 2016 burns were performed at Pondberry Bay bringing much of that preserve up-to-date with fire management.



**Prescribed burn at Pondberry Bay.  
Photo credit- PCP Staff.**

With the help of NCFS, PCP Staff conducted a prescribed burn at Redlair's Adam Hunter Prairie, home to the federally endangered Schweinitz's sunflower. Importantly this is one of the state's few populations not found in right-of-ways or along roadsides. This was not the first time this site has had a controlled burn; however, it was the first burn conducted since PCP purchased the preserve from the Rankin family. The sunflower monitoring results from 2016 show an increase in flowering as well as total stems relative to the past two years with a remarkable increase in seedlings! In 2016, we recorded >1,200 seedlings in this population, approximately three times more seedlings than the previous peak in 2012.



**Schweinitz's sunflower sprouting after burn at Redlair.  
Photo credit-PCP Staff.**

### **Habitat Restoration**

Prior to our efforts to reintroduce fire and manage for more open conditions, many of the sites PCP owns and manages had become dense and overgrown after decades of fire suppression, negatively impacting herbaceous species unable to compete with the denser vegetation. This is true for federally listed species such as smooth coneflower (*Echinacea laevigata*), Schweinitz's sunflower (*Helianthus schweinitzii*), and mountain sweet pitcher plant (*Sarracenia jonesii*), to name a few. Some of these sites cannot be restored with fire alone without excessive heat and dangerous burning conditions, which would likely be detrimental to the target forbs. In these cases, mechanical means of brush clearing and removal are used to re-open the habitat, often as a preparatory step for future prescribed burns. We try to remove as much of the biomass as possible either by hauling it away or burning it on site. Some may wonder why we remove the cut biomass rather than leave it on site for the benefit of wildlife or natural decay and nutrient cycling; however, at the volumes we're working with, we feel that we sometimes need to remove it to avoid further suppressing the target species and to avoid a pile-up of excessive fuels that might hinder or make more dangerous our future prescribed burns.

PCP Staff and volunteers cut and cleared extensive woody biomass, primarily loblolly pines and hardwood saplings, at the **Boiling Spring Lakes, Redlair, Hebron Road, and Eno River Diabase Sill Preserves**, as well as at important partnership sites, the Blue Indigo Slope Nature Preserve and Stanley Road Nature Preservers (both owned by the Eno River Association in Durham).



*Liatris squarrulosa* at the Eno River Diabase Sill Preserve where PCP staff cut loblolly pine in late 2015 (left) and Jess Richmond with volunteers removing a fallen tree from the trail at the Redlair Preserve (right). Photo credit: PCP Staff.

### **Controlling Invasive Species: a few examples**

PCP Staff treated the encroaching *Lespedeza* at the Harrelson and Goldston tracts of the **Eno River Diabase Sill Preserve**, where it is intermixed with a host of imperiled and rare species including tall larkspur (*Delphinium exaltatum*) and pink thoroughwort (*Fleishmania incarnata*). Volunteer preserve stewards and workday volunteers have lent quite a few hands to the PCP Staff at the **Hebron Road Preserve** to battle woody invasives. Regular updates provided by stewards at this preserve have helped to gauge the response of these species to our control efforts. PCP staff treated several large infestations of Japanese stilt grass, *Microstegium vimineum*, in parts of the **Eno River Diabase Sill Preserve**, significantly reduced populations of privet (*Ligustrum sinense* and *Ligustrum japonicum*), heavenly bamboo (*Nandina domestica*) and Queen Anne's lace (*Daucus carota*) across the preserve. The staff's efforts in controlling a variety of invasive plant species at these and many other preserves are great.



### **Species Monitoring**

Understanding the current status and trends of the populations we protect is very important. To that end, we have been collecting flowering data on several species across the state. In 2016 census and/or population monitoring work was conducted on the following species:

#### **-Ongoing Projects-**

- Bunched arrowhead and swamp pink–Henderson County.
- Schweinitz’s sunflower–Randolph, Montgomery, Union, and Gaston Counties.
- Smooth coneflower–Durham and Granville Counties.
- Mountain sweet and montane purple pitcher plants–Transylvania County.
- Venus flytrap–Brunswick County



**Bunched arrowhead flowering at Bat Fork Bog. Photo credit: PCP Staff.**



### New Discoveries & Rediscoveries

Several plant population discoveries and rediscoveries were made in 2016, in particular in the Durham and Granville County Preserves. A population of the NC Endangered veined skullcap (*Scutellaria nervosa*), was discovered at the **Butner Cedar Glade Preserve** (Granville Co.) as well as the rediscovery of the NC Endangered Piedmont quillwort (*Isoetes piedmontana*), previously last observed in the early 1990s. In addition, new patches of Special Concern-Vulnerable American barberry (*Berberis canadensis*), and NC Endangered shale-barren skullcap (*Scutellaria leonardii*) were found at the **Eno River Diabase Sill Preserve** (Durham Co.). A population of NC Threatened pink thoroughwort (*Fleishmania incarnata*) was also discovered at the **Eno River Diabase Sill Preserve**. Both the veined skullcap and pink thoroughwort discoveries were new species to the PCP Preserve system.



Veined skullcap, Photo credit: PCP Staff



Piedmont quillwort, Photo credit: PCP Staff



Pink thoroughwort, Photo credit: PCP Staff

## **Permits & Regulations**

In North Carolina, a protected plant permit is required to (a) remove from the wild, (b) to propagate or offer for sale/donation/gift, or (c) to plant or reintroduce any protected plants or plant parts into a non-garden environment. Exempt activities include: purchase of propagated protected plant species from nurseries or dealers with necessary permits, activities allowed under existing state laws and regulations, collection or removal from one's own land, or propagation or sale covered by a current certificate of origin (See 02 NCAC 38F.0407 for more information). PCP staff share all project details as well as copies of permits with partners at the NC Natural Heritage Program and US Fish and Wildlife Service for their records. Most permits require a final report be sent to PCP. We maintain a copy of all findings and reports in an effort to collate available knowledge on the protected plants of North Carolina and their habitats.

North Carolina Protected Plant Permits						
	Scientific Collection	Rescue Reintroduction	Preserve Access	Propagate and Sell	Home Garden	Public Exhibit
2006	7	2	0	6	1	0
2007	16	5	5	13	2	0
2008	19	2	7	17	3	0
2009	12	5	8	8	0	1
2010	4	2	7	0	1	0
2011	18	1	12	0	0	0
2012	21	3	3	21	0	1
2013	8	3	3	10	0	3
2014	10	4	24	1	0	3
2015	13	4	34	1	0	1
2016	15	1	37	1	0	1

## **Ginseng**

PCP regulates the sale of American ginseng (*Panax quinquefolius*) in North Carolina by issuing licenses to dealers and tracking all exports out of the state including all international exports which require additional CITES export certification. PCP Staff work directly with our licensed dealers to obtain as much data as possible regarding the locations and weights of all wild harvested ginseng in an attempt to monitor the health of the state's population. Records are also processed for wild-simulated and other cultivated ginseng exports. Before being exported, all ginseng, both wild and cultivated, must be certified by NCDA&CS and reported to PCP. PCP requires that all dealers keep track of the weights and county of origin for every ginseng purchase. With these data we are able to tally the total pounds of wild ginseng roots that are harvested per county and with that, estimate the total number of plants that are harvested per year. This information is helpful for determining the status of the species in North Carolina. In particular, these data inform us to the size of the plants being harvested and number of roots per pound to infer the availability of larger mature ginseng plants.

NCDA&CS issued a total of 58 ginseng dealer licenses for the 2015-2016 season, an increase in almost 20 licenses above the previous year. These licensed dealers had certified over 8,400 pounds of wild collected ginseng for export: 8,418 pounds Dry/Wild and one pound Green/Cultivated, representing harvests from 25 North Carolina counties.



PCP Staff participated in the 2016 annual Ginseng Marking Blitz in the Great Smoky Mountains National Park, a collaborative effort between NCDA&CS and the National Park. Removal of plants is illegal in US National Parks without a permit; permits are only issued to research professionals who may be using the plants for educational purposes. Each year thousands of wild American ginseng plants in National Parks and other lands are marked with a permanent dye so that if the plants are poached and attempted to be sold for export, it is possible to identify the roots as illegally poached from the park. PCP has begun using this same method to mark ginseng in the PCP Preserves.

### **Galax**

The sale of wild-collected galax (*Galax urceolata*) is regulated in North Carolina to within a buying season which prohibits harvest during the early growing season to allow for new leaves to emerge and grow. The US Forest Service, which allows for this plant to be harvested from some national forests, has a similar harvest ban during the early growing season. In an effort to avoid confusion, the PCP Board updated the state buying season to align with the harvest season of the USFS. Effective January 20, 2016, galax (*Galax urceolata*) may only be legally bought or sold in North Carolina during the buying season of June 15<sup>th</sup> through April 15<sup>th</sup>. Harvest of this species is prohibited from April 16<sup>th</sup>-June 14<sup>th</sup>.



**Galax (*Galax urceolata*), Photo credit- PCP Staff.**

### **Venus flytrap**

No new projects involving Venus flytraps were begun in 2016. PCP staff continued to monitor repatriated plants on PCP Preserve land which had been confiscated from poachers. The US Fish and Wildlife Service was petitioned by a private individual in 2016 to list this species federally. PCP was not involved in this petition process but became aware of it in collaboration with USFWS. This species is listed as Special Concern-Vulnerable in NC.



## Imperiled Plant Species Currently Documented on North Carolina Plant Conservation Preserves

Federally listed species are in bold. PCP staff is working toward verifying/updating each of these records.

1. <i>Acmispon helleri</i>	29. <b><i>Houstonia montana</i></b>	60. <i>Scutellaria nervosa</i>
2. <i>Agalinis virgata</i>	30. <i>Ilex collina</i>	61. <i>Shortia galacifolia</i> var. <i>brevistyla</i>
3. <i>Amorpha georgiana</i> var. <i>confusa</i>	31. <i>Isoetes piedmontana</i>	62. <i>Silene ovata</i>
4. <i>Anemone berlandieri</i>	32. <b><i>Liatris helleri</i></b>	63. <b><i>Sisyrinchium</i></b> <b><i>dichotomum</i></b>
5. <i>Arethusa bulbosa</i>	33. <i>Lilium canadense</i> spp. <i>editorum</i>	64. <i>Symphyotrichum</i> <i>depauperatum</i>
6. <i>Asclepias pedicellata</i>	34. <i>Lilium grayi</i>	65. <i>Symphyotrichum</i> <i>georgianum</i>
7. <i>Astragalus michauxii</i>	35. <i>Lilium philadelphicum</i> var. <i>philadelphicum</i>	66. <i>Symphyotrichum laeve</i> var. <i>concinnum</i>
8. <i>Baptisia alba</i>	36. <i>Lilium pyrophilum</i>	67. <i>Trichostema brachiatum</i>
9. <i>Baptisia australis</i> var. <i>aberrans</i>	37. <b><i>Lindera melissifolia</i></b>	
10. <i>Berberis canadensis</i>	38. <i>Lithospermum canescens</i>	
11. <i>Boechera missouriensis</i>	39. <i>Litsea aestivalis</i>	
12. <i>Carex radfordii</i>	40. <i>Ludwigia suffruticosa</i>	
13. <i>Carex trisperma</i>	41. <b><i>Lysimachia asperulifolia</i></b>	
14. <i>Celastrus scandens</i>	42. <i>Lysimachia fraseri</i>	
15. <i>Chelone cuthbertii</i>	43. <i>Magnolia macrophylla</i>	
16. <i>Cirsium lecontei</i>	44. <i>Micranthes pennsylvanica</i>	
17. <i>Coeloglossum viride</i> var. <i>virescens</i>	45. <i>Packera schweinitziana</i>	
18. <i>Cyperus granitophilus</i>	46. <i>Panicum flexile</i>	
19. <i>Dalibarda repens</i>	47. <i>Pellaea wrightiana</i>	
20. <i>Delphinium exaltatum</i>	48. <i>Platanthera grandiflora</i>	
21. <i>Dichantherium aciculare</i> ssp. <i>neuranthum</i>	49. <i>Polygala hookeri</i>	
22. <i>Dionaea muscipula</i>	50. <i>Portulaca smallii</i>	
23. <b><i>Echinacea laevigata</i></b>	51. <i>Rhexia aristosa</i>	
24. <i>Eleocharis elongata</i>	52. <b><i>Rhus michauxii</i></b>	
25. <i>Fleishmania incarnata</i>	53. <i>Rhynchospora harperi</i>	
26. <i>Geum geniculatum</i>	54. <i>Rhynchospora pleiantha</i>	
27. <b><i>Helianthus schweinitzii</i></b>	55. <i>Ruellia humilis</i>	
28. <b><i>Helonias bullata</i></b> (last observed in 2001)	56. <i>Ruellia purshiana</i>	
	57. <b><i>Sagittaria fasciculata</i></b>	
	58. <b><i>Sarracenia jonesii</i></b>	
	59. <i>Scutellaria leonardii</i>	
		Other species of special note: <i>Phemeranthus piedmontanus</i> -This species is not a North Carolina Protected Plant Species; however, it was not included in the most recent threat assessment because it was not named at the time. PCP Staff believe it will be included in future updates of the protected plant list.
		<i>Stachys eplingii</i> -Although globally secure (G5), PCP protects one of two known extant populations of this species in North Carolina.

**Partnerships/Collaborations:**

Appalachian State University, [biology.appstate.edu](http://biology.appstate.edu)  
Atlanta Botanical Garden, [www.atlantabotanicalgarden.org](http://www.atlantabotanicalgarden.org)  
Blue Ridge Conservancy, [blueridgeconservancy.org](http://blueridgeconservancy.org)  
Carolina Mountain Land Conservancy, [www.carolinamountain.org](http://www.carolinamountain.org)  
Catawba Lands Conservancy, [catawbalands.org](http://catawbalands.org)  
City of Boiling Spring Lakes, [www.cityofbsl.org](http://www.cityofbsl.org)  
Duke Forest at Duke University, [www.dukeforest.duke.edu](http://www.dukeforest.duke.edu)  
Eno River Association, [www.enoriver.org](http://www.enoriver.org)  
Foothills Land Conservancy, [foothillsland.org](http://foothillsland.org)  
French Board River Garden Club, [www.fbrgc.org](http://www.fbrgc.org)  
Friends of Mountains to Sea Trail, [www.ncmst.org](http://www.ncmst.org)  
Friends of Plant Conservation, [www.ncplantfriends.org](http://www.ncplantfriends.org)  
Highlands-Cashiers Land Trust, [www.hicashlt.org](http://www.hicashlt.org)  
James F. Matthews Center for Biodiversity Studies, <http://charmeck.org/MECKLENBURG/COUNTY/PARKANDREC>  
Land Trust for Central NC, [landtrustnc.org](http://landtrustnc.org)  
NC Botanical Garden, [ncbg.unc.edu](http://ncbg.unc.edu)  
NCDA&CS Forest Service, [ncforestservice.gov](http://ncforestservice.gov)  
NCDA&CS Research Station Division, [www.ncagr.gov/research](http://www.ncagr.gov/research)  
NC Museum of Natural Sciences, [naturalsciences.org](http://naturalsciences.org)  
NC Native Plant Society, [www.ncwildflower.org](http://www.ncwildflower.org)  
NC Natural Heritage Program, [www.ncnhp.org](http://www.ncnhp.org)  
NC Division of Parks and Recreation, [www.ncparks.gov](http://www.ncparks.gov)  
NC Wildlife Resources Commission, [www.ncwildlife.org](http://www.ncwildlife.org)  
Sandhills Area Land Trust, [www.sandhillslandtrust.org](http://www.sandhillslandtrust.org)  
The Nature Conservancy, [www.nature.org](http://www.nature.org)  
UNC Asheville, [www.unca.edu](http://www.unca.edu)  
US Army Corps of Engineers  
US Fish and Wildlife Service, [www.fws.gov/southeast](http://www.fws.gov/southeast)  
US Forest Service, [www.fs.usda.gov/nfsnc](http://www.fs.usda.gov/nfsnc)

Thank you to the many partners, volunteers, and other supporters  
who help us do this work!